



Energy

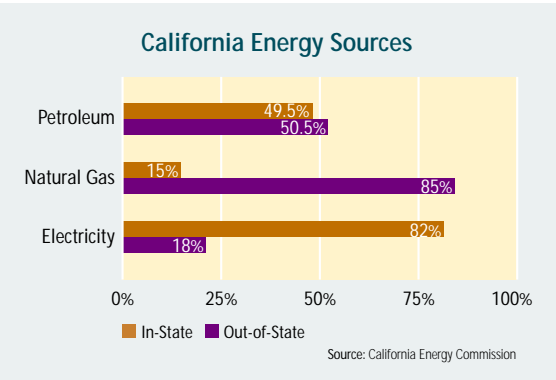
GOAL FOR 2020

Ensure that all Californians have more reliable, affordable, and cleaner energy. Achieve a diversified energy base and increase the share of renewable sources of power to 25% of the total.

“... California has the diverse tools and technologies necessary to propel a revolution in energy. These new technologies, many of which rely upon the wind and sun for fuel, are the equivalent of the wireless cell phones and portable laptops that replaced traditional grid-connected phones and huge mainframe computers... The current crisis is an opportunity to reap the benefits of technological progress this State has fostered over the past two decades. At the same time, California can push the next generation of sophisticated clean power technologies into the mainstream.”

— Peter Asmus, Sacramento Bee, January 21, 2001

Today's Issues



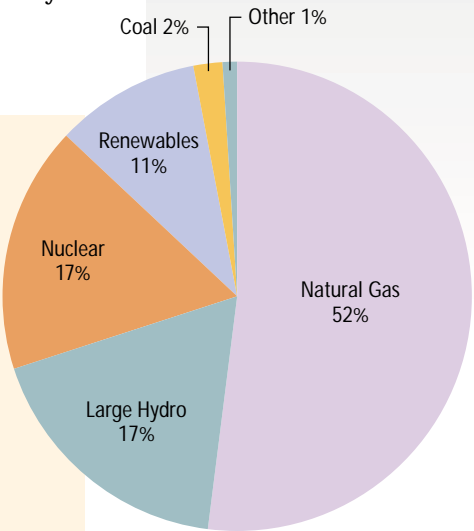
The electricity crisis of 2001 is the *second time in three decades* that California, and indeed the nation, has experienced such an energy challenge. California rose successfully to that challenge in the 1970s and 1980s by becoming a leader in energy efficiency and the development of new and alternative technologies. Californians have embraced conservation efforts and even greater results can be realized in the future. Until 1999, very little new electricity generation capacity was developed, while overall demand for electricity continued to increase. Long-term energy infrastructure issues relate to increasing supply and transmission capacity, managing demand, maintaining generation and transmission facilities and improving the policy and planning environment. To achieve sustainability, Californians must think differently about energy infrastructure.

“More than one-third of the U.S. energy is used to heat, cool, and light our living and working spaces. If these buildings were built and operated with off-the-shelf, cost-effective, and high-efficiency technologies, energy consumption could be cut by 50 to 80 percent.”

The Energy Foundation

Some California Energy Facts:

- Only two states consume less energy per capita than California.
- Due to its size, California is the 11th largest energy user in the world.
- The annual impact of all energy efficiency programs has been equal to 15% of total statewide energy consumption.
- Almost 50% of California's in-state electrical generation facilities are more than 30 years old.
- In 2000, the cumulative savings from California's appliance and building efficiency standards was \$20 billion.
- Approximately 50% of California's energy consumption results from transporting both goods and people.
- Projected requirements for 2020 energy needs are: 40% more electrical capacity, 40% more gasoline, and close to 20% more natural gas.
- In 2003, California consumers are projected to need 15.8 billion gallons of gasoline. Without additional refinery capacity, between 950 million and 1.6 billion gallons of gasoline and blending components will need to be imported.
- 11% of California's energy supply is renewable and this figure is projected to grow to 17% by 2010.
- California imports 85% of its natural gas supplies.



Share of Current In-State Power Generation Fuel Mix

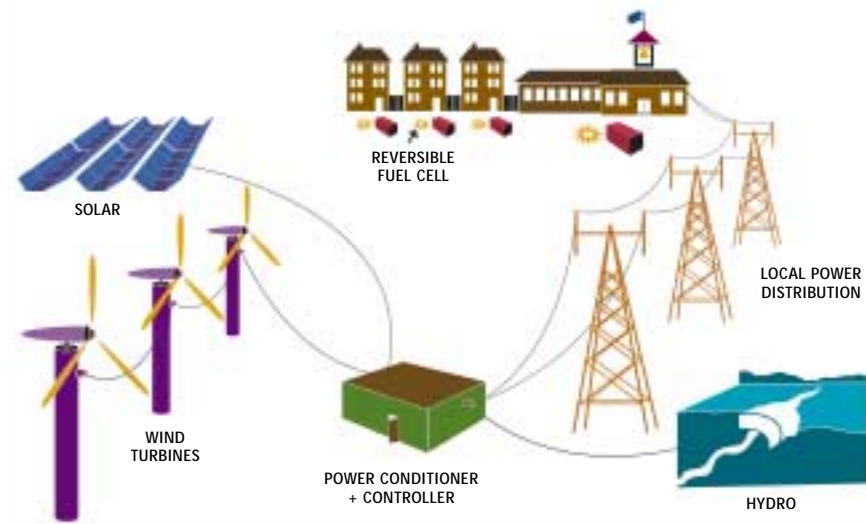
Source: RAND Corporation, February 2001

DISTRIBUTED

ENERGY SYSTEMS:

There is great potential for distributed energy generation systems, especially renewable or clean energy systems. Developed primarily in Europe, many communities in the United States are now developing similar programs, focused in many cases on co-generation (the combined production of heat and electricity) using renewable energy. This chart illustrates how a local distributed energy system could work.

USING RENEWABLES TO SUSTAIN DISTRIBUTED POWER AND HEATING NEEDS



Source: Isherwood, April 11, 1997

“Through the use of new technology, California now has 40% of the world’s geothermal power plants, 20% of the installed wind capacity, and 70–80% of the world’s solar electricity generation.”

California Energy Commission
June 2000

Actions Taken

- Since Governor Davis took office, 26 new power plants have been permitted by the California Energy Commission, with 18 under construction or in operation for a total of 7,927 megawatts, of which an estimated 4,000 will come on line by the end of summer 2001.
- California allocated \$540 million for renewable energy technologies between 1998-2001.
- California is a leader in energy efficiency funding. The California Public Utilities Commission allocates over \$300 million annually to these measures: retrofits for commercial lighting systems and cool roofs; loan guarantees for renewable energy projects; funding for use of alternative fuels in the agriculture and water pumping industries; and resources for the California Alternative Energy and Advanced Transportation Financing Authority.
- In 2001, the Governor signed SB 28X, (Senator Byron Sher), which has expedited power plant siting while maintaining environmental protections.
- The California Consumer Power and Conservation Financing Authority was created in 2001 to market up to \$5 billion in new bonds for new projects; it also has the power to build and operate generation facilities.
- Improvements to the natural gas and electricity distribution systems are currently underway and will reduce bottlenecks and improve service and control of the systems.
- In 2001, California instituted measures to subsidize the development of small, local generation facilities, known as distributed energy systems, which use renewable sources or efficient gas technology to generate power onsite.

Investing for California's Future

The Commission has identified the following priorities for meeting our energy needs:

- *Meeting the short-term energy needs of all Californians through conservation, efficiency, and immediate action to increase supply and avoid shortages, within the context of the State's long-term energy goals*
- *Increasing the supply and diversity of power generation sources and transmission methods*
- *Supporting the deployment of new technologies that provide clean and reliable sources of power and the most efficient and cost-effective uses of energy*
- *Assuring the continued supply of petroleum-based fuels, while encouraging the development of renewable and alternative energy and transportation fuels*
- *Creating fair markets and regulatory conditions to protect consumers and encourage private sector investment*

Recommended Options

The following recommended options will help achieve our priorities:

FINANCING AND FISCAL POLICY

- Create and implement a comprehensive statewide energy infrastructure policy that meets California's future needs for reliable and affordable energy.
- Provide timely and consistent permit review and incentives to upgrade generation and transmission facilities with state-of-the-art technologies, such as metering and other real-time pricing mechanisms.
- Establish an "Energy Seed Capital Fund" and/or an "Energy Investment Fund" targeted to energy, transportation and environmental business development opportunities, with a focus on early product research and development, operating through equity investments.
- Use the California Infrastructure and Economic Development Bank and other financing mechanisms to support development of regional and community distributed generation capacity and the purchase of energy savings equipment, retrofits, etc.

CASE STUDY

Renewable Energy in Public Facilities: Santa Rita County Jail, Dublin, California

At the jail, the first batch of 4,700, 4-foot by 4-foot PowerLight solar panels, were switched on in June, 2001 to produce 65 kilowatts of power. Once complete, the system will be the largest array of rooftop panels in the Western Hemisphere and will produce 500 kilowatts, saving the county \$300,000 a year in energy costs. Of all county buildings in Santa Rita, the jail has the largest roof and is the largest user of electricity. The solar array will generate the most power during the hours when the need is greatest.

Source: San Francisco Chronicle, June 13, 2001.



Solar panels used to reform hydrogen from water, to be used as fuel for zero emissions vehicles. SunLine Transit Palm Desert, California

PHOTO CREDIT: J. SPENCER/
CALIFORNIA DEPARTMENT OF TRANSPORTATION

CASE STUDY

Potential for Renewable Power Generation

Renewable sources of energy offer a viable diversification option and provide economic development opportunities, especially when leveraged by public incentives or as a return on investment for a public finance model. Wind power is one sector with great potential. Germany is the world's largest producer, followed by the United States. Denmark generates 13% of its energy from wind, and is the world's leader in this sector, through building upon initial innovations developed in California. Other facts on wind generation potential:

- The world total production now exceeds 17,000 megawatts, up from 7,600 megawatts in 1997, an average growth of 31% per year.
- In 2000, more than 4000 megawatts were installed worldwide, with 5,000 megawatts projects planned for 2001.
- Wind installations come on line fast (less than one year) and are easily integrated into the existing grid.
- Europe's goal is to produce 100,000 megawatts by 2030.
- Wind generated electricity costs have dropped and continue to decrease.

Sources: European Wind Energy Association, American Wind Energy Association, National Wind Technology Center, Sandia National Laboratory, Danish Ministry, National Renewable Energy Lab

- Increase incentives for development of transportation-related alternative energy and alternative vehicles markets, including fuel cell technology.
- Invest in new technologies and systems (e.g., state and private universities centers of excellence) to develop and commercialize new technologies and applications.
- Develop a cost accounting system that calculates the actual value of renewable and non-renewable resources and energy conservation, efficiencies and generation.
- Seek to include real time metering in new building standards to allow consumers to track energy use and encourage conservation during peak demand time.

IMPROVED PLANNING

- Identify mismatches and imbalances in regional energy supply and demand, and provide incentives for regional planning and monitoring; ensure that energy planning



*Windmills at
Pacheco Pass
State Park,
Merced County,
California*

PHOTO CREDIT: CALIFORNIA DEPARTMENT OF PARKS AND RECREATION

- is linked to land use, housing, water, transportation and other infrastructure planning, incorporating conservation and efficiency strategies.
- Link California State Government energy planning and infrastructure development to the capital budget planning process (AB 1473) and other investment programs and include lifecycle costing analysis.
 - Provide resources to targeted local governments to prepare energy elements as part of their General Plans.
 - Provide technical assistance to local and regional planning agencies to implement the California Energy Commission's PLACE³S Geographic Information System (GIS) model.
 - Ensure that adequate market data is available to State agencies, including the California Energy and California Public Utilities Commissions, to allow them to monitor developments and trends in electricity and natural gas markets in order to promote long-term planning activities.
 - Reorganize state entities to facilitate a coordinated effort in energy policy, planning and implementation to eliminate redundancies and inefficiencies.

BARRIER REMOVAL

- Develop regulatory and financing strategies that will bring down the cost of product development, testing, and market introduction for new energy technologies and industries.
- Reconsider current tax rates for decentralized power systems and other initiatives that decrease risks and costs.
- Seek to eliminate barriers to the development of California's natural gas resources.
- Develop an efficient permitting process to ensure that statewide energy interests are met, including siting of electricity generation and transmission, and natural gas transportation and storage.

IMPROVED IMPLEMENTATION AND USE

- Implement the Sustainable Building Initiative for State-owned and leased facilities (see Public Facilities section for description); use as demonstration models, and provide incentives and technical assistance for implementation by the private sector, local governments and other entities.
- Assess potential for use of State-owned land and facilities, military bases, etc. for possible siting of generation and transmission facilities.
- Explore joint use of State-owned assets such as highway corridors for placement of transmission lines.
- Develop enhanced model building ordinances, building standards, subdivision design standards, and other planning tools for energy efficiencies, including different land use models to reduce dependency on automobiles. Work with public and private sector partners, including local government, the utilities, and the planner/builder/developer community to foster adoption of new models and best practices.
- Transition State and local governments into expanded use of alternative and renewable fuels.
- Explore opportunities for off-peak work times for public employees, where possible, to reduce peak energy demand. Offer incentives for public and private sector employee participation.

CASE STUDY

Incentives for Energy Efficient Vehicles: Los Angeles, California

To promote the use of environmentally clean and energy-efficient vehicles, Los Angeles city officials have begun offering free parking without restrictions, to anyone driving super ultra low-emission vehicles (SULEVs) or Zero-Emission vehicles (ZEVs). This pilot program, whose development was spearheaded by Los Angeles City Councilman Alex Padilla, commenced in April 2001, and will be in effect for one year. All qualifying vehicles will be identified by clean air vehicle decals issued by the California Department of Motor Vehicles that allow certain single-occupant electric and alternative fuel powered vehicles to use the High Occupancy Vehicle (HOV) lanes.

Source: Office of Councilman Alex Padilla, City of Los Angeles



Electric vehicles recharging at California Department of General Services parking facility, Sacramento, California

PHOTO CREDIT: J. SPENCER/CALIFORNIA DEPARTMENT OF TRANSPORTATION